

## Chapter 2

# Happenings at the GPU Conference

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The following pages should convey the lively convivial atmosphere at the GPU conference in nice surroundings of Harbin in China's Dongbei region.

### 1. July 26th: Registration Day



#### Harbin HANLIN HYATT Hotel Registration

The conference was held in Harbin HANLIN HYATT Hotel at XueFu Road No. 56, NanGang, Harbin, Heilongjiang, China. July 26th is the registration day, in which

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almost 100 computational experts and scholars from the world's well-known universities and institutes arrived.

## 2. July 27th: The First Day



The Group Photo of attendees from the conference

At the beginning, Prof. Xuebin Chi, the director of the Supercomputing Center of CNIC, Chinese Academy of Sciences and Prof. David Yuen from the University of Minnesota gave the exciting opening speeches. Prof. Chi pointed out that a revolutionary change is brewing in the field of technologies and applications of high performance computing due to the rapid development of GPU technology. He further expressed the hope that the discussion on GPU applications to multi-scale problems in science and engineering be fruitful.



Prof. Chi Xuebin, the director of the Supercomputing Center of CNIC, CAS gave the Opening Speech



Prof. Dave A. Yuen from University of Minnesota gave a Second Opening Speech.



Mr. John Xie, NVIDIA, China PSG Sr. Sales Manager Spoke on «TESLA GPU Computing Update»



Prof. Wei Ge, IPECAS, China spoke on «Development and application of a HPC system for multi-scale discrete simulation—Mole-8.5»



Prof. Lennart Johnsson, University of Houston, USA «Acceleration for energy efficient, cost effective HPC»



Dr. Matthew Knepley, University of Chicago, USA «Fast Multiple Solvers for Vortex Method on GPU»



Prof. Wei Ge, IPECAS, China spoke on «Development and application of a HPC system for multi-scale discrete simulation—Mole-8.5»



Dr. Peng Wang, NVIDIA, USA «GPU Best Practices for HPC Applications at Industry Scale»



Dr. Taro Okamoto, Tokyo Institute of Technology, Japan «GPU-Accelerated Simulation of Seismic Wave Propagation»



Prof. Hong Liu, IGGCAS, China «Accelerating RTM on CUDA platform of CPU/GPU»





Prof. Yangdong Deng, Tsinghua University, China «Accelerating Simulation of Seismic Wave Propagation by Multi GPUs and 3D Decomposition»



Prof. Takayuki Aoki, Tokyo Institute of Technology, Japan «Large-scale CFD Applications on GPU-based Supercomputer at Tokyo Institute of Technology»



Prof. Yunquan Zhang, ISCAS, China «Accelerating Linpack Performance with Mixed Precision Algorithm on CPU+GPGPU Heterogeneous Cluster»



Prof. Yifeng Chen, Peking University, China «Towards Developing Portable FFT Library for GPU Clusters»



Dr. Junjie Peng, Shanghai University, China «Parallel Lattice Boltzmann Method on CUDA Architecture»



Dr. Thomas Geenen, University of Amsterdam, the Netherlands «Iterative deblurring of large 3D datasets from Cryomicrotome imaging using an array of GPUs»



Dr. Ying Liu, GUCAS, China «Some GPU Statistical Applications in SCCAS»



Dr. Xianfeng He, IPECAS, China «Parallel Visualization of Multi-scale simulation: GPU implement and application in Mole-8.5»



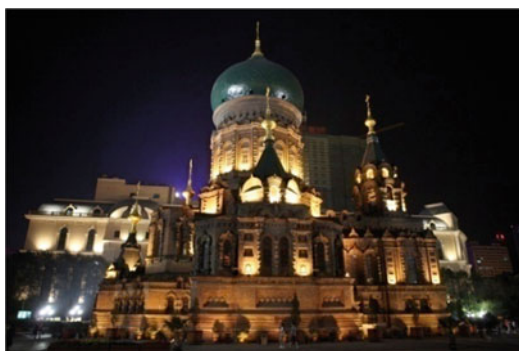
Dr. Long Wang, SCCAS, CNIC, China «Some GPU Applications in SCCAS»

Eighteen talks on GPU solutions to multi-scale problems in science and engineering were given on the first day of the conference. The banquet was held in PORTMAN Russian type restaurant, which is located on Central Avenue, the evening was extremely beautiful.





Banquet PORTMAN Russian Type Restaurant



Holy Sophia Cathedral in the night

3. July 28th: The Second Day



Mr. Rob M. Weiss, Macalester College, USA «WebViz»



Prof. Xiaowen Chu, Hong Kong Baptist University, China «Practical Random Linear Network Coding on GPUs». Prof. Jun Makino, National Astronomical Observatory of Japan, Japan «GRAPE and GRAPE-DR»



Dr. Andreas Kloeckner, Brown University, USA «High-Order Discontinuous Galerkin Methods by GPU Metaprogramming»



Dr. Harald Koestler, University of Erlangen-Nuremberg, Germany «Software and Performance Engineering for numerical codes on GPU clusters»



Prof. Xisheng Luo, USTC, China &lt;&lt;GPU accelerated CESE Method for 1D shock tube problems&gt;&gt;



Dr. Rory Kelly, NCAR, Boulder, USA <<GPU application to Large Numerical simulations in Atmospheres>>



Prof. Wensheng Bian, ICCAS, China <<Multi-scale Simulation of Hydrogen-oriented Chemical Reactions>>



Prof. Dongsheng Xu, IMRCAS, China «Nucleation and reaction of dislocations in some metals and intermetallic compound TiAl»



Dr. Shuxia Zhang, University of Minnesota, USA «High Throughput Computing and Interactive Visualization on a Desktop Supercomputer»



Dr. Gaojin Wen, SIAT, CAS, China «Parallelized Binomial Option Pricing on Heterogeneous Supercomputer»



Dr. Ying Xu, SSC, China «Fully-resolved direct numerical simulation of particle-laden turbulent flow using GPUs»



Dr. Yanbin Yang, BAO, CAS, China «Accelerating Multi-Scale Astrophysical Particle Simulations with Many-Core Hardware»



Dr. Bojing Zhu, GUCAS, China «Correlation of Zipingpu reservoir and 2008 Wenchuan earthquake by fluid flow driven pore-network crack mode»





Mr. Sen Li, SCCAS, CNIC, China «GPU Computing On Computational Fluid Dynamics»



Mr. David Sanchez, University of Minnesota, USA «High Rayleigh Number 3D Mantle Convection on GPU»



Mr. Liang Zheng, University of Chinese Academy of Sciences, China «GPU Applications to Multigrid Solver for Stokes Equations»



Mr. Robin Weiss, Macalester College, USA «GPU-Accelerated Swarm Intelligence Algorithms for Data Mining»



Ms. Zhoujun Liu, IACAS, China «Particle-based Simulation of sand-ripples and Interaction with Obstacle using GPU technique»



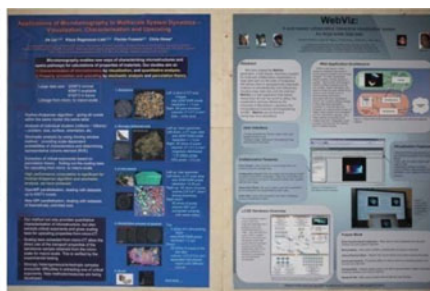
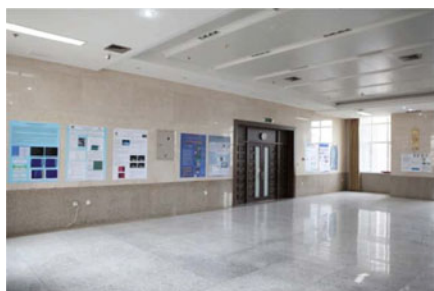
Ms. Xiaohua Wan, ICTCAS, China «Three-dimensional reconstruction of electron tomography using graphic processing units (GPUs)»



Mr. Weile Jia, SCCAS, CNIC, China «N-body simulation on GPU cluster»



Mr. Boris Galvan, Bonn University, German «GPU simulation of evolving fracture networks in a poro-elastoplastic medium with pressure-dependent permeability»



## Posters

### 4. July 29th: Sightseeing

On the last day we went touring at three sites around greater Harbin, which included the tiger zoo, Russian Church and had Natural park on Sun Island by the river.

In all, the participants enjoyed a convivial atmosphere in which many ideas were exchanged and new friendships were forged.



Sun Island adjacent to the river



Siberian Tiger Artificial Propagation Center



Central Avenue in downtown Harbin



Holy Sophia Cathedral



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